

#6

SEQUENCE LISTING



<110> RIKEN

AJINOMOTO CO., INC.

<120> A METHOD FOR INCREASING STRESS-RESISTANCE TO A PLANT

<130> 204936US-3524-10-0

<150> JP 2001-72650

<151> 2001-03-14

<160> 15

<170> PatentIn Ver. 2.0

<210> 1

<211> 344

<212> PRT

<213> Arabidopsis thaliana

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Met Ala Pro Gly Leu Thr Gln Thr Ala Asp Ala Met Ser Thr Val Thr

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Ile Thr Lys Pro Ser Leu Pro Ser Val Gln Asp Ser Asp Arg Ala Tyr

20 25 30

Val Thr Phe Leu Ala Gly Asn Gly Asp Tyr Val Lys Gly Val Val Gly

35 40 45

Leu Ala Lys Gly Leu Arg Lys Val Lys Ser Ala Tyr Pro Leu Val Val
50 55 60

Ala Met Leu Pro Asp Val Pro Glu Glu His Arg Arg Ile Leu Val Asp
65 70 75 80

Gln Gly Cys Ile Val Arg Glu Ile Glu Pro Val Tyr Pro Pro Glu Asn
85 90 95

Gln Thr Gln Phe Ala Met Ala Tyr Tyr Val Ile Asn Tyr Ser Lys Leu
100 105 110

Arg Ile Trp Lys Phe Val Glu Tyr Ser Lys Met Ile Tyr Leu Asp Gly
115 120 125

Asp Ile Gln Val Tyr Glu Asn Ile Asp His Leu Phe Asp Leu Pro Asp
130 135 140

Gly Tyr Leu Tyr Ala Val Met Asp Cys Phe Cys Glu Lys Thr Trp Ser
145 150 155 160

His Thr Pro Gln Tyr Lys Ile Arg Tyr Cys Gln Gln Cys Pro Asp Lys
165 170 175

Val Gln Trp Pro Lys Ala Glu Leu Gly Glu Pro Pro Ala Leu Tyr Phe
180 185 190

Asn Ala Gly Met Phe Leu Tyr Glu Pro Asn Leu Glu Thr Tyr Glu Asp

195

200

205

Leu Leu Arg Thr Leu Lys Ile Thr Pro Pro Thr Pro Phe Ala Glu Gln

210

215

220

Asp Phe Leu Asn Met Tyr Phe Lys Lys Ile Tyr Lys Pro Ile Pro Leu

225

230

235

240

Val Tyr Asn Leu Val Leu Ala Met Leu Trp Arg His Pro Glu Asn Val

245

250

255

Glu Leu Gly Lys Val Lys Val Val His Tyr Cys Ala Ala Gly Ser Lys

260

265

270

Pro Trp Arg Tyr Thr Gly Lys Glu Ala Asn Met Glu Arg Glu Asp Ile

275

280

285

Lys Met Leu Val Lys Lys Trp Trp Asp Ile Tyr Asp Asp Glu Ser Leu

290

295

300

Asp Tyr Lys Lys Pro Val Thr Val Val Asp Thr Glu Val Asp Leu Val

305

310

315

320

Asn Leu Lys Pro Phe Ile Thr Ala Leu Thr Glu Ala Gly Arg Leu Asn

325

330

335

Tyr Val Thr Ala Pro Ser Ala Ala

340

<210> 2

<211> 335

<212> PRT

<213> Arabidopsis thaliana

<400> 2

Met Ala Pro Glu Ile Asn Thr Lys Leu Thr Val Pro Val His Ser Ala

1

5

10

15

Thr Gly Gly Glu Lys Arg Ala Tyr Val Thr Phe Leu Ala Gly Thr Gly

20

25

30

Asp Tyr Val Lys Gly Val Val Gly Leu Ala Lys Gly Leu Arg Lys Ala

35

40

45

Lys Ser Lys Tyr Pro Leu Val Val Ala Val Leu Pro Asp Val Pro Glu

50

55

60

Asp His Arg Lys Gln Leu Val Asp Gln Gly Cys Val Val Lys Glu Ile

65

70

75

80

Glu Pro Val Tyr Pro Pro Glu Asn Gln Thr Glu Phe Ala Met Ala Tyr

85

90

95

Tyr Val Ile Asn Tyr Ser Lys Leu Arg Ile Trp Glu Phe Val Glu Tyr

100

105

110

Asn Lys Met Ile Tyr Leu Asp Gly Asp Ile Gln Val Phe Asp Asn Ile

115	120	125	
Asp His Leu Phe Asp Leu Pro Asn Gly Gln Phe Tyr Ala Val Met Asp			
130	135	140	
Cys Phe Cys Glu Lys Thr Trp Ser His Ser Pro Gln Tyr Lys Ile Gly			
145	150	155	160
Tyr Cys Gln Gln Cys Pro Asp Lys Val Thr Trp Pro Glu Ala Lys Leu			
	165	170	175
Gly Pro Lys Pro Pro Leu Tyr Phe Asn Ala Gly Met Phe Val Tyr Glu			
	180	185	190
Pro Asn Leu Ser Thr Tyr His Asn Leu Leu Glu Thr Val Lys Ile Val			
	195	200	205
Pro Pro Thr Leu Phe Ala Glu Gln Asp Phe Leu Asn Met Tyr Phe Lys			
210	215	220	
Asp Ile Tyr Lys Pro Ile Pro Pro Val Tyr Asn Leu Val Leu Ala Met			
225	230	235	240
Leu Trp Arg His Pro Glu Asn Ile Glu Leu Asp Gln Val Lys Val Val			
	245	250	255
His Tyr Cys Ala Ala Gly Ala Lys Pro Trp Arg Phe Thr Gly Glu Glu			
260	265	270	

Glu Asn Met Asp Arg Glu Asp Ile Lys Met Leu Val Lys Lys Trp Trp
 275 280 285

Asp Ile Tyr Asn Asp Glu Ser Leu Asp Tyr Lys Asn Val Val Ile Gly
 290 295 300

Asp Ser His Lys Lys Gln Gln Thr Leu Gln Gln Phe Ile Glu Ala Leu
 305 310 315 320

Ser Glu Ala Gly Ala Leu Gln Tyr Val Lys Ala Pro Ser Ala Ala
 325 330 335

<210> 3

<211> 1064

<212> DNA

<213> Arabidopsis thaliana

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 gattacgtga aaggagtcgt tggtttagcc aaagggttaa ggaaagtcaa atcggcttat 180
 ccactcgtag tagcgatggt acccgacgtc ccggagggaac accgtcgtat acttgtggat 240
 caaggatgca tcgtccgtga aatcgaaccc gtttaccac ccgagaacca aactcagttc 300
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 agtaaaatga tataattaga tggagacatt caagtttacg aaaacatcga tcacttgttt 420
 gacctaccag atggctatit gtacgcggtg atggattggt tctgtgagaa aacatggagt 480
 cacacgccgc aatacaagat cagatatgtc caacaatgcc ccgacaaagt ccagtggcca 540
 aaagcggagc ttggagagcc accggctcct tacttcaacg ccggaatgtt ctgtacgag 600

cctaacctcg agacttacga ggaatctacta cgaacactta aaatcactcc tccgactcct 660
 ttcgctgaac aggatttttt gaacatgtac tttaagaaaa tctacaagcc gattccttta 720
 gtgtacaatc tcgtccttgc gatgttatgg cgtcacccag aaaatgtaga gcttggaaaa 780
 gtcaaggtagg ttactactg tgcagcgggt tcgaagccgt ggagatacac agggaaagaa 840
 gcgaacatgg agagggaaga tataaaaatg ttagtgaaaa aatggtagga catttacgac 900
 gacgaatcct tggattacaa gaaacctggt accgttgtgg acacagaggt cgatctcgtg 960
 aatctgaagc cgttcacac cgctcttact gaagctggcc ggctcaacta cgtgaccgca 1020
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<210> 4

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<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:primer

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<211> 22

<212> DNA

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<223> Description of Artificial Sequence:primer

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<210> 8

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<223> Description of Artificial Sequence:primer

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<223> Description of Artificial Sequence:primer

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gtgttgacaa gaacctcgct

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<223> Description of Artificial Sequence:primer

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cgcgcatcca tggctccggg gcttactcaa ac

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<210> 11

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<223> Description of Artificial Sequence:primer

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<223> Description of Artificial Sequence:primer

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<210> 15

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<212> DNA

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<223> Description of Artificial Sequence:primer

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cgcggatccc tggltgtgac aagaacctcg ctc

33

#6

SEQUENCE LISTING

<110> TAJI, Teruaki
SHINOZAKI, Kazuo
OHSUMI, Chieko



<120> A METHOD FOR INCREASING STRESS-RESISTANCE TO A PLANT

<130> 20436US0

<140> 09/810,506

<141> 2001-03-19

<150> JP2001-072650

<151> 2001-03-14

<160> 15

<170> PatentIn version 3.1

<210> 1

<211> 344

<212> PRT

<213> Arabidopsis thaliana

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Ile	Thr	Lys	Pro	Ser	Leu	Pro	Ser	Val	Gln	Asp	Ser	Asp	Arg	Ala	Tyr
			20					25					30		
Val	Thr	Phe	Leu	Ala	Gly	Asn	Gly	Asp	Tyr	Val	Lys	Gly	Val	Val	Gly
		35					40					45			
Leu	Ala	Lys	Gly	Leu	Arg	Lys	Val	Lys	Ser	Ala	Tyr	Pro	Leu	Val	Val
	50					55						60			
Ala	Met	Leu	Pro	Asp	Val	Pro	Glu	Glu	His	Arg	Arg	Ile	Leu	Val	Asp
65					70					75					80
Gln	Gly	Cys	Ile	Val	Arg	Glu	Ile	Glu	Pro	Val	Tyr	Pro	Pro	Glu	Asn
				85					90					95	
Gln	Thr	Gln	Phe	Ala	Met	Ala	Tyr	Tyr	Val	Ile	Asn	Tyr	Ser	Lys	Leu
			100					105					110		
Arg	Ile	Trp	Lys	Phe	Val	Glu	Tyr	Ser	Lys	Met	Ile	Tyr	Leu	Asp	Gly
		115					120					125			
Asp	Ile	Gln	Val	Tyr	Glu	Asn	Ile	Asp	His	Leu	Phe	Asp	Leu	Pro	Asp
	130					135					140				
Gly	Tyr	Leu	Tyr	Ala	Val	Met	Asp	Cys	Phe	Cys	Glu	Lys	Thr	Trp	Ser
145					150					155					160
His	Thr	Pro	Gln	Tyr	Lys	Ile	Arg	Tyr	Cys	Gln	Gln	Cys	Pro	Asp	Lys
				165					170					175	
Val	Gln	Trp	Pro	Lys	Ala	Glu	Leu	Gly	Glu	Pro	Pro	Ala	Leu	Tyr	Phe
			180					185					190		
Asn	Ala	Gly	Met	Phe	Leu	Tyr	Glu	Pro	Asn	Leu	Glu	Thr	Tyr	Glu	Asp
		195					200					205			

Leu Leu Arg Thr Leu Lys Ile Thr Pro Pro Thr Pro Phe Ala Glu Gln
210 215 220

Asp Phe Leu Asn Met Tyr Phe Lys Lys Ile Tyr Lys Pro Ile Pro Leu
225 230 235 240

Val Tyr Asn Leu Val Leu Ala Met Leu Trp Arg His Pro Glu Asn Val
245 250 255

Glu Leu Gly Lys Val Lys Val Val His Tyr Cys Ala Ala Gly Ser Lys
260 265 270

Pro Trp Arg Tyr Thr Gly Lys Glu Ala Asn Met Glu Arg Glu Asp Ile
275 280 285

Lys Met Leu Val Lys Lys Trp Trp Asp Ile Tyr Asp Asp Glu Ser Leu
290 295 300

Asp Tyr Lys Lys Pro Val Thr Val Val Asp Thr Glu Val Asp Leu Val
305 310 315 320

Asn Leu Lys Pro Phe Ile Thr Ala Leu Thr Glu Ala Gly Arg Leu Asn
325 330 335

Tyr Val Thr Ala Pro Ser Ala Ala
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<210> 2

<211> 335

<212> PRT

<213> Arabidopsis thaliana

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Met Ala Pro Glu Ile Asn Thr Lys Leu Thr Val Pro Val His Ser Ala
1 5 10 15

Thr	Gly	Gly	Glu	Lys	Arg	Ala	Tyr	Val	Thr	Phe	Leu	Ala	Gly	Thr	Gly
			20					25					30		
Asp	Tyr	Val	Lys	Gly	Val	Val	Gly	Leu	Ala	Lys	Gly	Leu	Arg	Lys	Ala
		35					40					45			
Lys	Ser	Lys	Tyr	Pro	Leu	Val	Val	Ala	Val	Leu	Pro	Asp	Val	Pro	Glu
	50					55					60				
Asp	His	Arg	Lys	Gln	Leu	Val	Asp	Gln	Gly	Cys	Val	Val	Lys	Glu	Ile
65					70					75					80
Glu	Pro	Val	Tyr	Pro	Pro	Glu	Asn	Gln	Thr	Glu	Phe	Ala	Met	Ala	Tyr
				85					90					95	
Tyr	Val	Ile	Asn	Tyr	Ser	Lys	Leu	Arg	Ile	Trp	Glu	Phe	Val	Glu	Tyr
			100					105					110		
Asn	Lys	Met	Ile	Tyr	Leu	Asp	Gly	Asp	Ile	Gln	Val	Phe	Asp	Asn	Ile
		115					120					125			
Asp	His	Leu	Phe	Asp	Leu	Pro	Asn	Gly	Gln	Phe	Tyr	Ala	Val	Met	Asp
	130					135					140				
Cys	Phe	Cys	Glu	Lys	Thr	Trp	Ser	His	Ser	Pro	Gln	Tyr	Lys	Ile	Gly
145					150					155					160
Tyr	Cys	Gln	Gln	Cys	Pro	Asp	Lys	Val	Thr	Trp	Pro	Glu	Ala	Lys	Leu
				165					170					175	
Gly	Pro	Lys	Pro	Pro	Leu	Tyr	Phe	Asn	Ala	Gly	Met	Phe	Val	Tyr	Glu
			180					185					190		
Pro	Asn	Leu	Ser	Thr	Tyr	His	Asn	Leu	Leu	Glu	Thr	Val	Lys	Ile	Val
		195					200					205			
Pro	Pro	Thr	Leu	Phe	Ala	Glu	Gln	Asp	Phe	Leu	Asn	Met	Tyr	Phe	Lys
	210					215					220				

Asp Ile Tyr Lys Pro Ile Pro Pro Val Tyr Asn Leu Val Leu Ala Met
225 230 235 240

Leu Trp Arg His Pro Glu Asn Ile Glu Leu Asp Gln Val Lys Val Val
245 250 255

His Tyr Cys Ala Ala Gly Ala Lys Pro Trp Arg Phe Thr Gly Glu Glu
260 265 270

Glu Asn Met Asp Arg Glu Asp Ile Lys Met Leu Val Lys Lys Trp Trp
275 280 285

Asp Ile Tyr Asn Asp Glu Ser Leu Asp Tyr Lys Asn Val Val Ile Gly
290 295 300

Asp Ser His Lys Lys Gln Gln Thr Leu Gln Gln Phe Ile Glu Ala Leu
305 310 315 320

Ser Glu Ala Gly Ala Leu Gln Tyr Val Lys Ala Pro Ser Ala Ala
325 330 335

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<212> DNA

<213> Arabidopsis thaliana

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gattacgtga aaggagtcgt tggtttagcc aaagggttaa ggaaagtcaa atcggcttat	180
ccactcgtag tagcgatggt acccgacgtc ccggagggaac accgtcgtat acttgtggat	240
caaggatgca tcgtccgtga aatcgaaccc gtttaccac ccgagaacca aactcagttc	300
gccatggctt attacgtcat caactactct aaactccgta tctggaagtt tgtggagtat	360
agtaaaatga tatatttaga tggagacatt caagtttacg aaaacatcga tcacttgttt	420

gacctaccag atggctat	gtacgcggtg atggattgtt	tctgtgagaa aacatggagt	480
cacacgccgc aatacaagat	cagatattgc caacaatgcc	ccgacaaagt ccagtggcca	540
aaagcggagc ttggagagcc	accggctctt tacttcaacg	ccggaatggt cttgtacgag	600
cctaacctcg agacttacga	ggatctacta cgaacactta	aaatcactcc tccgactcct	660
ttcgctgaac aggatttttt	gaacatgtac tttaagaaaa	tctacaagcc gattccttta	720
gtgtacaatc tcgtccttgc	gatgttatgg cgtcacccag	aaaatgtaga gcttggaaaa	780
gtcaagggtgg ttcactactg	tgcagcgggt tcgaagccgt	ggagatacac agggaaagaa	840
gcgaacatgg agagggaaga	tataaaaatg ttagtgaaaa	aatggtggga catttacgac	900
gacgaatcct tggattacaa	gaaacctggt accgttgtgg	acacagaggt cgatctcgtg	960
aatctgaagc cgttcacac	cgtcttact gaagctggcc	ggctcaacta cgtgaccgca	1020
ccgtccgctg cttgaatggt	gccaggagtt aaaattgtcg	gtgg	1064

<210> 4

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<212> DNA

<213> Artificial Sequence

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<223> synthetic DNA

<400> 4

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<210> 5

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<212> DNA

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caaggatccc ctggcaatca agcagcgga

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cgccacagta caagatcggt ta

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<210> 7

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catgaagagg cgtatgcagc

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<210> 12

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<212> DNA

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<400> 12

cgcggatcca tggcacctga gatcaatacc

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<223> synthetic DNA

<400> 13

cgcggatccg aggcgtatgc agcaacgagc

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<212> DNA

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cgcggatccc tgggtgttgac aagaacctcg etc

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